Educating the Next Generation of Scientists and Engineers

The Office of Science's Office of Workforce Development for Teachers and Scientists (WDTS) has many national programs that support the next generation of scientists, engineers and science, technology, engineering and mathematics (STEM) educators. WDTS programs encourage students to pursue advanced science and mathematics courses and participate in a variety of special programs outside of their classrooms. WDTS national programs are run mainly through the Office of Science National Laboratories* science education offices, and also in close collaboration with the National Nuclear Security Administration and Office of Energy Efficiency and Renewable Energy's laboratories, when funding permits.
For more information: http://www.scied.science.doe.gov

Educational Events and Competitions

The U.S. Department of Energy (DOE) National Science Bowl® is a nationwide academic competition for high school and middle school students. Students' are quizzed in all areas of science in a fast paced question-and-answer format similar to Jeopardy.

The National Science Bowl for high school students is in its 17th year and involves more than 12,000 students throughout the United States. More than 60 regional competitions across the country lead up to the National Finals held in Washington, DC. This event also includes scientific discovery sessions that employ the process a real scientist would use to answer a question in subjects such as physics, chemistry, astronomy and biology. Student teams also design and build model hydrogen fuel cell vehicles.

The National School Science Bowl for middle school students is in its 6th year and involves more than 5,000 students. This competition encourages students to pursue science and mathematics at the most critical stage of their academic development. The final competition is held in Denver, Colorado which includes a hands-on engineering component where students design, build, and race model hydrogen fuel cell vehicles.

The regional and national events that are a part of the National Science Bowl encourage student involvement in mathematics and science activities, improve awareness of career options in science and technology, and provide an avenue of enrichment and reward for academic science achievement.
For more information please visit: http://nationalsciencebowl.energy.gov
Program Managers: Sue Ellen Walbridge, Sue-Ellen.Walbridge@science.doe.gov or

* Many of the DOE National Laboratories have their own educational programs that are run locally or regionally. For information regarding these programs, please visit http://science.doe.gov/feature/WDTS-map/WDTS-map.htm . Information regarding the science done at each laboratory is also available from individual websites. For a link to a listing of these websites, please visit http://www.science.doe.gov/National_Laboratories/index.htm

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Mentoring Programs for College Students

Each year more than 600 undergraduate students are paired with research scientists at the National Laboratories who serve as mentors in authentic research projects. Job skills training in topics such as technical writing and science presentation skills are also provided. To ensure the program is available to a national pool of applicants, selected participants receive funds for travel to and from the laboratories and a housing allowance in addition to their stipend. All participants write a research abstract that is published in the WDTS *Journal of Undergraduate Research*. Online copies of this journal are available from the website. The National Science Foundation (NSF) and the National Institutes of Health (NIH) partner with WDTS to help extend these opportunities to a wider audience of students.

University and community college students considering a career in science and/or engineering can spend the summer, spring or fall in the ***Student Undergraduate Laboratory Internship (SULI)*** program. Students work with scientists or engineers on projects related to the laboratories' research programs. This program helps students better understand the opportunities available to them in these fields.
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Students from community colleges can participate in paid research internships in ***Science and Engineering and Technology*** at any of several different laboratories. Students work with scientists or engineers on projects related to the laboratories' research programs. They also attend career planning and training/informational sessions. This program is sponsored by The Community College Institute (CCI) of Science and Technology.
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Research experience for undergraduate students who are preparing to become K-12 science, technology or math teachers is available through The ***Pre-Service Teacher Program (PST).*** Future teachers are paired with a master teacher and a laboratory scientist. The workshops for PST participants are designed to help the teachers provide resources and suggestions for translating their research experiences to the classroom.
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Professional Development Opportunities for Teachers and Faculty

Potential K-12 teacher leaders, those with additional training who mentor and coach their peers, are supported through the ***Department of Energy Academies Creating Teacher Scientists (DOE ACTS)***. The program is designed based on the most current educational research to increase teacher content knowledge for those who wish to spur innovation in their schools. Teachers receive a stipend as well as mini-grant money for additional professional travel or training and supply money for their classroom.
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The Albert Einstein Distinguished Educator Fellowship Program was enacted by Congress in 1994 and is administered by the DOE with participation from other federal agencies, such as the NSF, National Aeronautics and Space Administration, NIH, National Oceanographic and Atmospheric Administration, and National Institutes of Standards and Technology. This program brings teachers to Congress and appropriate federal agencies to provide the K- 12 educator's perspectives to policy makers and program managers of federal education programs.
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Opportunities for undergraduate students and faculty to pursue cutting edge research are available through the ***Faculty and Student Teams (FaST***) program. Two or three undergraduate students from colleges and universities that receive below the 50th percentile in federal research funding, as well as institutions serving women and minorities underrepresented in the fields of science, engineering, and technology are eligible. The teams conduct cutting edge research as they partner with researchers at the laboratories. All faculty participants are required to write research grant proposals. The NSF partners with WDTS to help extend these opportunities to a wider audience of faculty.
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Excess laboratory equipment can be obtained by universities and colleges and other nonprofit educational institutions of higher learning in the United States from the ***Used Energy-Related Laboratory Equipment (ERLE***) Grant Program from the United States Department of Energy (DOE). The equipment is for use in energy oriented educational programs.
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